

## REMARKS

### Introductory Comments

As of the mailing date of the 08/20/2008 Office Action, claims 1-13, 46, and 47 were pending in the present application. In the present Amendment, claims 1, 5, 46, and 47 have been amended, leaving 1-13, 46, and 47 for consideration upon entry of the present Amendment. The claims have been amended as explained below. No new matter has been introduced by these amendments. Reconsideration and allowance of the claims is respectfully requested in view of the foregoing amendments and the following remarks.

### Claim Amendments

Independent claims 1, 46, and 47 have been amended in the preamble to read “An aqueous sizing composition comprising the product of combining.” where underlining is used to signify words added via amendment. These amendments are supported, at least, by claim 21 as filed.

Claims 1, 46, and 47 have been further amended to characterize the “polymer solution” with the transitional phrase “comprising” rather than “consisting of”.

Claims 1 and 46 have been further amended to characterize component (a) with the clause, “wherein the alkenyl succinic anhydride component comprises a surfactant component selected from the group consisting of sulfosuccinates, alkyl and aryl amides and primary, secondary and tertiary amines and their corresponding quaternary salts, fatty acids, ethoxylated fatty acids, fatty alcohols, ethoxylated fatty alcohols, fatty esters, ethoxylated fatty esters, ethoxylated triglycerides, ethoxylated lanolin, sulfonated amines, sulfonated amides, ethoxylated polymers, propoxylated polymers, ethoxylated/propoxylated copolymers, polyethylene glycols, phosphate esters, phosphonated fatty acid ethoxylates, phosphonated fatty alcohol ethoxylates, alkyl sulfonates, aryl sulfonates, alkyl sulfates, alkylsulfates, and combinations thereof”. Similarly, claim 47 has been further amended to characterize component (a) with the clause, “wherein the alkylene ketene dimer component comprises a surfactant component selected from the group consisting of sulfosuccinates, alkyl and aryl amides and primary,

secondary and tertiary amines and their corresponding quaternary salts, fatty acids, ethoxylated fatty acids, fatty alcohols, ethoxylated fatty alcohols, fatty esters, ethoxylated fatty esters, ethoxylated triglycerides, ethoxylated lanolin, sulfonated amines, sulfonated amides, ethoxylated polymers, propoxylated polymers, ethoxylated/propoxylated copolymers, polyethylene glycols, phosphate esters, phosphonated fatty acid ethoxylates, phosphonated fatty alcohol ethoxylates, alkyl sulfonates, aryl sulfonates, alkyl sulfates, alkylsulfates, and combinations thereof'. Support for the amendments to claims 1 and 46 can be found, at least, in the application as filed on page 9, lines 9-10 ("Optionally, the alkenylsuccinic anhydride component may also contain a surfactant component") and in claim 5 (particular surfactant components); the amendment to claim 47 relies on the same support and, in addition, on the abstract ("alkylene ketene dimer can be used instead of alkenylsuccinic anhydride").

Claim 5 has been amended to recite a single surfactant component, ethoxylated fatty alcohol, which is supported by claim 5 as filed.

Claim 46 has been further amended to delete the word "heated" in clause (a), and to state that the "first component" of clause (a) is the "emulsion" of clause (a).

Applicants are not conceding in this application that the amended claims would not have been patentable without the current amendments. The present claim amendments are intended only to facilitate expeditious allowance of valuable subject matter. Applicants respectfully reserve the right to present and prosecute the original versions of amended claims in one or more continuing applications.

Claim Rejections Under 35 U.S.C. § 112, Second Paragraph

Claims 1-13, 46, and 47 stand rejected under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. 08/20/2008 Office Action, page 4, last full paragraph. In particular, the Office Action states,

Claims 1, 46 and 47 recite an aqueous composition comprising as a first component an emulsion comprising alkenylsuccinic anhydride (ASA) or

alkylene ketene dimer (AKD) particles suspended in an aqueous polymer solution, which consists of water and a vinyl addition or condensation polymers having anionic, non-ionic or amphoteric charge characteristics (first polymer). The composition comprises a second component that can be cationic starches, non-ionic starches, anionic starches, water-soluble polymer water or mixtures thereof. In further dependent claims, the composition also comprises a surfactant.

In the combined composition, the ASA or AKD is suspended in an aqueous composition comprising the first polymer, the second component and, in some embodiments, a surfactant. It is not clear how the first and second components and the surfactant can be separate from each other in the composition. If the component (a) emulsion consists of the claimed sizing agent and polymer, then it cannot be combined with a second component or surfactant and still retain its identity or consist of only the claimed ingredients. For instance, where the second component is a water-soluble polymer, how can the water soluble polymer be separated from the aqueous emulsion? In the case where the second component is water, how can water be separate from the water in the aqueous emulsion?

08/20/2008 Office Action, paragraph bridging pages 4 and 5; and page 5, first full paragraph.

Applicants have amended independent claims 1, 46, and 46 in their respective preambles to recite “An aqueous sizing composition comprising the product of combining.” components (a) and (b). In view of these amendments, Applicants respectfully assert that it is clear that components (a) and (b) are prepared separately but are not separate in the final composition. The same claims have been amended to substitute “comprising” for “consists of” in the context of the polymer solution, thereby rendering moot the Examiner’s argument premised with the phrase “If the component (a) emulsion consists of the claimed sizing agent and polymer”. Accordingly, Applicants respectfully request the reconsideration and withdrawal of the rejection of claims 1-13, 46, and 47 under 35 U.S.C. § 112, second paragraph.

Anticipation or Obviousness Rejections over Frolich

Claims 1-7, 9-11, 46, and 47 stand rejected under 35 U.S.C. § 102(b), as allegedly anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over U.S. Patent No. 5,969,011 to Frolich et al. (hereinafter “Frolich”). 08/20/2008 Office Action, page 5,

last full paragraph. Applicants respectfully traverse this rejection to the extent it may be applicable to the claims as currently amended.

Frolich generally describes an aqueous dispersion containing a cellulose-reactive sizing agent and a dispersant system comprising a low molecular weight cationic organic compound having a molecular weight less than 10,000 and an anionic stabilizer, as well as the preparation and use of the aqueous dispersion in the production of paper. Frolich abstract. In Frolich's methods of preparing his aqueous dispersions, the dispersion is not formed until all components are present. Frolich, column 6, line 43 to column 7, line 17.

Applicants respectfully assert that claims 1-7, 9-11, 46, and 47 are neither anticipated by nor obvious over Frolich because Frolich does not teach or suggest a sizing composition comprising the product of combining (a) an emulsion comprising an ASA or AKD component containing ASA or AKD particles and an aqueous polymer solution, and (b) a second component selected from the group consisting of cationic starches, non-ionic starches, anionic starches, water-soluble polymer, water, and mixtures thereof.

Anticipation requires that all of the limitations of the claim be found within a single prior art reference. *Scripps Clinic & Research Foundation v. Genentech, Inc.*, 927 F.2d 1565, 1576 (Fed. Cir. 1991). ‘Because the hallmark of anticipation is prior invention, the prior art reference – in order to anticipate under 35 U.S.C. § 102 – must not only disclose all elements of the claim within the four corners of the document, but must also disclose those elements ‘arranged as in the claim.’’ *Net MoneyIn v. Verisign*, No. 2007-1565, slip op. at 15, 2008 WL 4614511 at \*8, (Fed. Cir. 2008) (quoting *Connell v. Sears, Roebuck & Co.*, 722 F.2d 1542, 1548 (Fed. Cir. 1983)).

For an obviousness rejection to be proper, the Examiner must meet the burden of establishing a prima facie case of obviousness. *In re Fine*, 5 U.S.P.Q.2d 1596, 1598 (Fed. Cir. 1988). Establishing a prima facie case of obviousness requires that all limitations of the claim be taught or suggested by the prior art. See, e.g., MPEP 2143.03; *CFMT, Inc. v. Yieldup Intern. Corp.*, 349 F.3d 1333, 1342 (Fed. Cir. 2003); *In re Royka*, 490 F.2d 981, 985 (C.C.P.A. 1974).

Applicants independent claims 1, 46, and 47 are each directed to a sizing composition comprising the product of combining (a) an emulsion comprising an ASA or AKD component containing ASA or AKD particles suspended in an aqueous polymer solution, and (b) a second component selected from the group consisting of cationic starches, non-ionic starches, anionic starches, water-soluble polymer, water, and mixtures thereof. In other words, these claims require the use of a component (a) emulsion that is formed prior to being combined with component (b). In contrast, Frolich's methods of preparing his aqueous dispersions, the dispersion is not formed until all components are present. Frolich, column 6, line 43 to column 7, line 17. Frolich thus does not teach or suggest the sizing compositions of Applicants' claims 1, 46, and 47, and Frolich therefore cannot anticipate these claims or support a *prima facie* case of obviousness against them. Given that claims 2-7 and 9-11 each depend ultimately from and further limit claim 1, they too are neither anticipated by nor obvious over Frolich. Applicants therefore respectfully request the reconsideration and withdrawal of the rejection of claims 1-7, 9-11, 46, and 47 under 35 U.S.C. § 102(b) or under 35 U.S.C. § 103(a) over Frolich.

Anticipation or Obviousness Rejections over Novak

Claims 1-6, 9-11, 46, and 47 stand rejected under 35 U.S.C. § 102(b), as allegedly anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over U.S. Patent No. 4,606,773 to Novak (hereinafter "Novak"). 08/20/2008 Office Action, page 8, first paragraph. Applicants respectfully traverse this rejection to the extent it may be applicable to the claims as currently amended.

Novak generally describes an emulsion of alkenyl succinic anhydride sizing agents are prepared using a cationic water-soluble polymer and a cationic starch as an emulsifier. Novak abstract. Novak teaches various methods of making his emulsions, including adding surfactant to ASA prior to emulsification in an aqueous medium (column 2, lines 65-66), adding surfactant to the aqueous medium prior to adding ASA (column 2, lines 66-68), and adding polymer-starch additives to already formed ASA emulsions (column 5, lines 14-16).

Applicants respectfully assert that claims 1-6, 9-11, 46, and 47 are neither anticipated by nor obvious over Novak because Novak does not teach or suggest a sizing composition comprising the product of combining (a) an emulsion comprising an ASA or AKD component containing ASA or AKD particles and an aqueous polymer solution, and (b) a second component selected from the group consisting of cationic starches, non-ionic starches, anionic starches, water-soluble polymer, water, and mixtures thereof. As noted above, independent claims 1, 46, and 47 each require such a sizing composition. In contrast, Novak teaches adding surfactant to ASA prior to emulsification in an aqueous medium (column 2, lines 65-66), adding surfactant to the aqueous medium prior to adding ASA (column 2, lines 66-68), and adding polymer-starch additives to already formed ASA emulsions (column 5, lines 14-16). None of Novak's methods of preparing his emulsions correspond to combining a first component comprising Applicants' component (a) "polymer" and a second component selected from cationic starches, non-ionic starches, anionic starches, water-soluble polymer, water, and mixtures thereof. Accordingly, independent claims 1, 46, and 47 are neither anticipated by nor obvious over Novak. Claims 2-6 and 9-11, which each depend ultimately from and further limit claim 1, are also not anticipated by or obvious over Novak. Applicants therefore respectfully request the reconsideration and withdrawal of the rejection of claims 1-6, 9-11, 46, and 47 under 35 U.S.C. § 102(b) or under 35 U.S.C. § 103(a) over Novak.

Anticipation or Obviousness Rejections over Wasser

Claims 1-3, 7, 9-12, 46, and 47 stand rejected under 35 U.S.C. § 102(b), as allegedly anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over International Publication No. WO 97/05330 of Wasser (hereinafter "Wasser"). 08/20/2008 Office Action, page 9, second paragraph. Applicants respectfully traverse this rejection to the extent it may be applicable to the claims as currently amended.

Wasser generally describes the use of synthetic cationic polymers as promoters for alkenyl succinic anhydride sizing. Wasser abstract. Wasser does not appear to teach or suggest the use of surfactant.

Applicants respectfully assert that claims 1-3, 7, 9-12, 46, and 47 are neither anticipated by nor obvious over Wasser because Wasser does not teach or suggest the use of a surfactant. Applicants' independent claims 1, 46, and 47 have been amended to require a surfactant in component (a). Wasser does not appear to teach or suggest the use of any surfactant, let alone the specific surfactants recited in Applicants' independent claims 1, 46, and 47. Claims 1, 46, and 47 are therefore neither anticipated by nor obvious over Wasser. Claims 2, 3, 7, 9-12, which each depend ultimately from and further limit claim 1, are likewise not anticipated by nor obvious over Wasser. Applicants therefore respectfully request the reconsideration and withdrawal of the rejection of claims 1-3, 7, 9-12, 46, and 47 under 35 U.S.C. § 102(b) or under 35 U.S.C. § 103(a) over Wasser.

Obviousness Rejections over (Frolich OR Novak OR Wasser) + Chunyu

Claim 8 stands rejected under 35 U.S.C. § 103(a), as allegedly unpatentable over Frolich, Novak, or Wasser, as evidenced by C. Chunyu, "Alkenyl Succinic Anhydrides (ASA): a Neutral Sizing Agent" (hereinafter "Chunyu"). 08/20/2008 Office Action, page 10, last full paragraph. Applicants respectfully traverse this rejection to the extent it may be applicable to the claims as currently amended.

Frolich, Novak, and Wasser are discussed above.

Chunyu generally describes the use of alkenyl succinic anhydrides as neutral sizing agents. Chunyu is cited for its discussion of the hydrolysis of ASA. 08/20/2008 Office Action, paragraph bridging pages 10 and 11.

Applicants respectfully assert that claim 8 is patentable over Frolich or Novak or Wasser, as evidenced by Chunyu, because the addition of Chunyu does not affect the conclusion that claim 1, from which claim 8 depends, is patentable over Frolich or Novak or Wasser.

As discussed above, claim 1 is not obvious over Frolich, Novak, or Wasser. Therefore, claim 8, which depends directly from claim 1, is also patentable over Frolich, Novak, or Wasser. The addition of Chunyu, which is cited for its discussion of the

hydrolysis of ASA, does not change these conclusions. Specifically, with respect to Frolich and Novak, the addition of Chunyu does not change the conclusion that Frolich and Novak do not teach or suggest a sizing composition comprising the product of combining (a) an emulsion comprising an ASA or AKD component containing ASA or AKD particles and an aqueous polymer solution, and (b) a second component selected from the group consisting of cationic starches, non-ionic starches, anionic starches, water-soluble polymer, water, and mixtures thereof. With respect to Wasser, which does not teach or suggest the use of surfactant, Chunyu does mention “surfactant” as an emulsifier (page 7, line 4) but does not teach or suggest any of the specific surfactants recited in claim 1. Accordingly, claim 8 is patentable over Frolich or Novak or Wasser, as evidenced by Chunyu. Applicants therefore respectfully request the reconsideration and withdrawal of the rejection of claim 8 under 35 U.S.C. § 103(a) over Frolich or Novak or Wasser, as evidenced by Chunyu.

Obviousness Rejections over Frolich

Claims 10 and 11 stand rejected under 35 U.S.C. § 103(a), as allegedly unpatentable over Frolich. 08/20/2008 Office Action, page 11, first full paragraph.

This rejection is rebutted above in the context of the rejection of claims 1-7, 9-11, 46, and 47 as anticipated by or obvious over Frolich.

Nonstatutory Double Patenting Rejections

Claims 1-2, 4-13, 46, and 47 stand rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over Claims 1-12, 44, and 45 of copending Application No. 10/534,202.

Claims 1, 6-13, 46, and 47 stand rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over Claims 1, 4-11, 30, and 33 of copending Application No. 10/533,702 in view of Novak.

Applicants thank the Examiner for pointing out the potential obviousness-type double patenting issue between the claims of the present application and those of co-

pending application Nos. 10/534,202 and 10/533,702. In view of the present claim amendments and the possibility that claims in the cited applications will be further amended before allowance, Applicants will defer responding to this provisional rejection until claims in the reference applications are allowed, claims in the present application are otherwise allowable, and it is determined whether this provisional rejection becomes an actual rejection.

It is believed that the foregoing amendments and remarks fully comply with the Office Action and that the claims herein should now be allowable to Applicants. Accordingly, reconsideration and allowance is respectfully requested.

It is believed that all the pending claims have been addressed. However, the absence of a reply to a specific rejection, issue or comment does not signify agreement with or concession of that rejection, issue or comment. In addition, because the arguments made above may not be exhaustive, there may be reasons for patentability of any or all pending claims (or other claims) that have not been expressed. Finally, nothing in this paper should be construed as an intent to concede any issue with regard to any claim, except as specifically stated in this paper, and the amendment of any claim does not necessarily signify concession of unpatentability of the claim prior to its amendment.

If there are any additional charges with respect to this Amendment or otherwise, please charge them to Deposit Account No. 06-1130 maintained by Assignee.

Respectfully submitted,

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